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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/519,672

03/06/2000

Toshihiko Ouchi

35.G2544

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03/09/2004

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EXAMINER

THOMAS, COURTNEY D

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

KD.

Office Action Summary	Application No. 09/519,672	Applicant(s) OUCHI ET AL.	
	Examiner Courtney Thomas	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 81-85, 89-96, 98 and 99 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 81-85, 89-96, 98 and 99 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

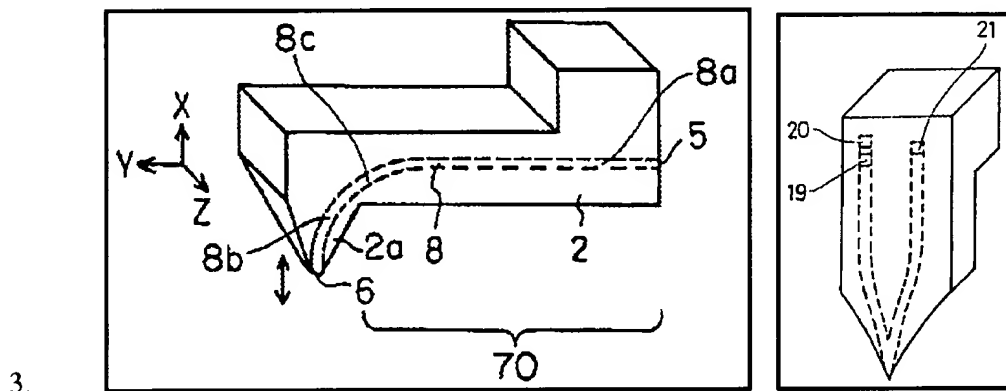
DETAILED ACTION***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 81, 82 and 93-95 rejected under 35 U.S.C. 102(e) as being anticipated by Muramatsu et al. (U.S. Patent 5,969,821).



Figures 2e and 7a – U.S. Patent 5,969,821 to Muramatsu et al.

4. As per claims 81, 82, 88, 93 and 96, Muramatsu et al. disclose a surface optical apparatus comprising a surface light emitting device (8), a substrate (2) for supporting the light emitting device (8); wherein the surface light emitting device (8) includes a protrusion with an opening placed on a light emitting region of the surface light emitting device (8) and a photo-detector (20, 21) to detect output light from the surface light emitting device (8 – column 7, lines 17-20); and wherein evanescent light leaks from the opening (see Fig. 2e above).

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5. **As per claim 94**, Muramatsu et al. disclose an apparatus wherein the supporter is shaped into a cantilever and wherein the supporter is shaped as a trapezoidal cantilever whose central portion is removed (see Figs. 2e and 7a, above).

6. **As per claims 88 and 96**, Muramatsu et al. disclose an apparatus wherein the surface-emitting device comprises a surface emitting semiconductor laser (column 5, lines 28-29).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 83 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (U.S. Patent 5,969,821) as applied to claim 81 above, and further in view of Applicant's admitted prior art (admission).

9. **As per claim 83**, Muramatsu et al. do not explicitly disclose an apparatus wherein the opening (of the protrusion) is less than 100 nm.

10. Admission teaches the development of optical techniques using evanescent light from a minute opening of less than 100 nm formed at a sharp probe tip (Background of the invention, p. 1, lines 14-16).

11. It would have been obvious to modify the apparatus of Muramatsu et al. such that it incorporated an opening of less than 100 nm. One would have been motivated to make such a modification for the purpose of obtaining high-resolving power observation, high density

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information recording, super fine optical exposure and the like as taught by applicant's admission (Background of the invention, p. 1, lines 16-19).

12. Claims 84, 86 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (U.S. Patent 5,969,821).

13. **As per claim 84**, Muramatsu et al. do not explicitly disclose an apparatus wherein the shape of the protrusion is a quadrangle pyramid.

14. Muramatsu et al. disclose a protrusion having a conical shape, terminating at an apex (see Fig. 2e above).

15. It would have been obvious to modify the apparatus of Muramatsu et al. such that it incorporated a quadrangle pyramid protrusion. One would have been motivated to make such a modification for the purpose of limiting the diameter of the light emitted from the protrusion opening as taught by Muramatsu et al. Examiner additionally notes that the protrusion of Muramatsu et al. al. would be recognized as a functional equivalent to a quadrangle pyramid protrusion.

16. **As per claims 86 and 87**, Muramatsu et al. disclose a substrate comprising silicon and corresponding thin films (column 3, line 11). Muramatsu et al. do not explicitly disclose an apparatus comprising patterned layers of silicon compounds, including silicon nitride.

17. It would have been obvious to modify the apparatus of Muramatsu et al. such that it comprised a silicon substrate and patterned layers of silicon compounds including silicon nitride. One would have been motivated to make such a modification so that the resulting substrate is provided with sufficient insulation to prevent the unwanted flow of charge on the supporting structure, while also providing mechanical strength for the mounting of optical components.

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18. Claim 85 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (U.S. Patent 5,969,821) in view of Quate et al. (U.S. Patent 5,666,190).

19. **As per claim 85**, Muramatsu et al. do not explicitly disclose an apparatus wherein the surface-emitting device is supported by a substrate through an elastic supporter.

20. Quate et al. disclose an apparatus wherein the surface-emitting device is supported by a substrate through an elastic supporter (Fig. 1, #20; column 4, lines 10-14).

21. It would have been obvious to modify the apparatus of Muramatsu et al. such that it incorporated an elastic supporter for the surface-emitting device. One would have been motivated to make such a modification for the purpose of enabling a probe tip to be responsive to forces that cause vibrations, so a system could use the information to adjust the gap between the tip and the surface of interest as taught by Quate et al. (column 2, lines 17-20).

22. Claims 90-92, 98 and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramatsu et al. (U.S. Patent 5,969,821) as applied to claims 81 and 93 above, and further in view of Jain (U.S. Patent 5,212,706) and Watanabe et al. (U.S. Patent 5,825,789).

23. **As per claims 90-92, 98 and 99**, Muramatsu et al. do not explicitly disclose an apparatus wherein the surface emitting laser comprises layers of GaAs, AlGaAs, InGaAs and GaN.

24. Jain discloses a surface-emitting laser comprising layers of GaAs, AlGaAs, InGaAs (see Fig. 1).

25. Watanabe et al. disclose a surface-emitting laser comprising layers of GaN, AlGaAs, InGaAs (column 2, lines 7-11).

26. It would have been obvious to further modify the apparatus of Muramatsu et al., such that it incorporated layers of GaAs, AlGaAs, InGaAs and GaN. One would have been motivated to

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make such a modification for the purpose of employing assemblies to provide multiple laser beam outputs as taught by Jain (column 1, lines 7-10). Additionally, Watanabe et al. teach that GaN is desirable as a layer because its rigidity is comparable to that of diamond (column 6, lines 6-8) and is therefore suitable as a support layer.

Response to Arguments

27. Applicant's arguments with respect to claims 81-85, 89-96, 98 and 99 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (571) 272-2496. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CT
Courtney Thomas


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER